

# Server Farms

**TRADOC Digital Training  
Conference  
USAIS - Fort Benning, GA  
21-22 January 04**

***Mr. Boyd J. Duncan***

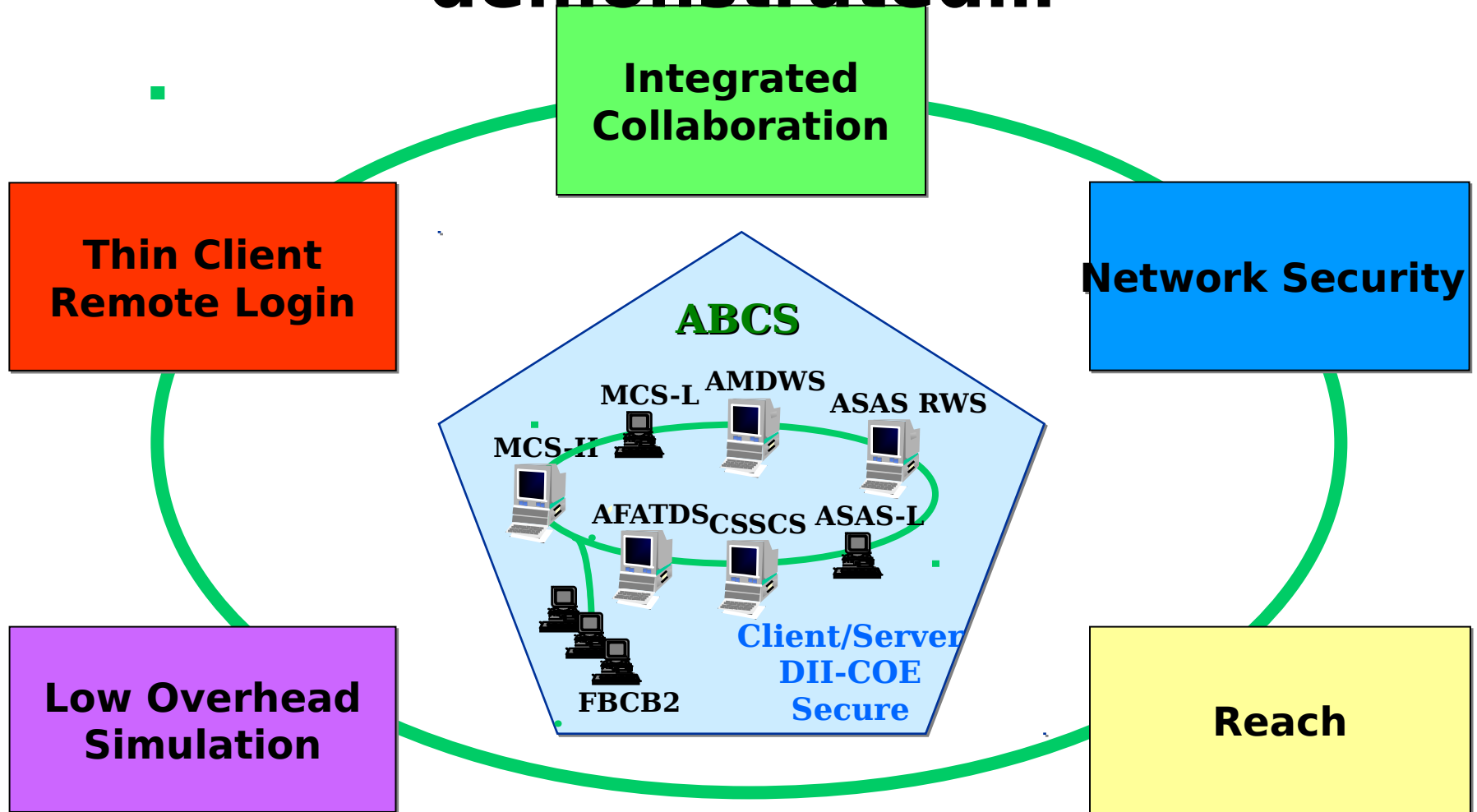
***DCSOPS&T, TRADOC***

# **Secure Distributed Digital Training System (SD2TS) (Server Farms)**

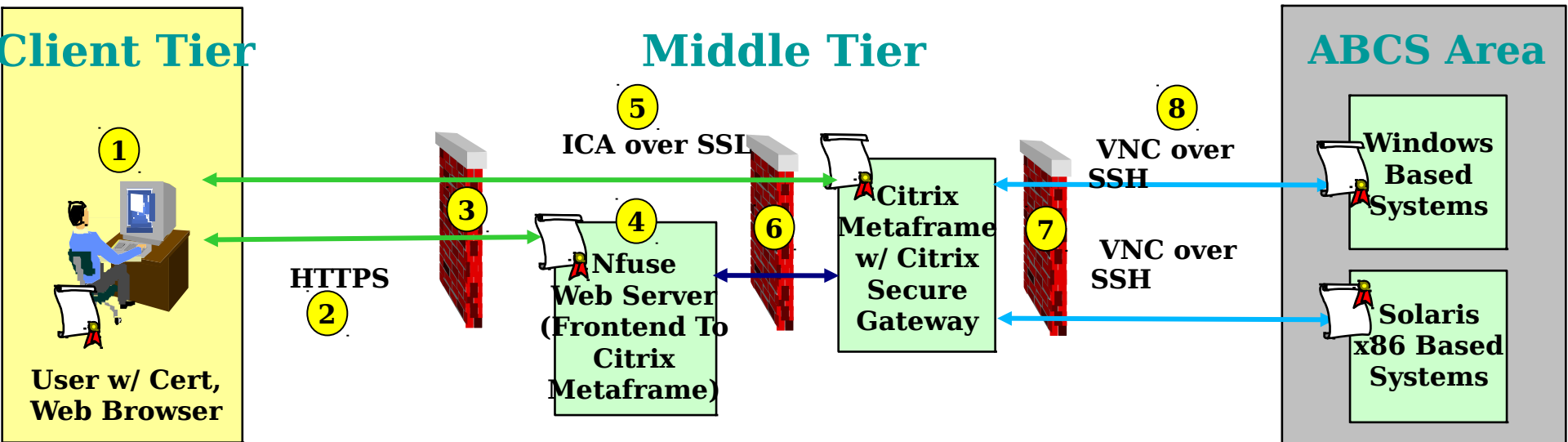
# Purpose

**Describe implementation plan for  
TRADOC Schools and Centers to  
employ SD2TS architecture  
demonstrated by ABCS Proof of  
Principle (PoP) 3**

# ABCS PoP 3 demonstrated...



# High-Level Design



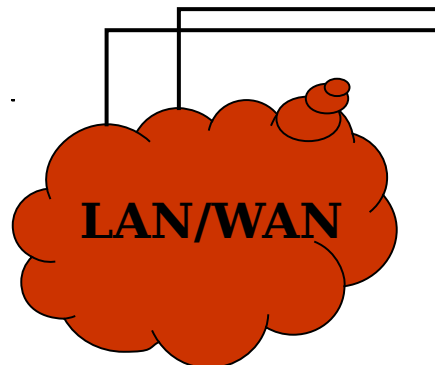
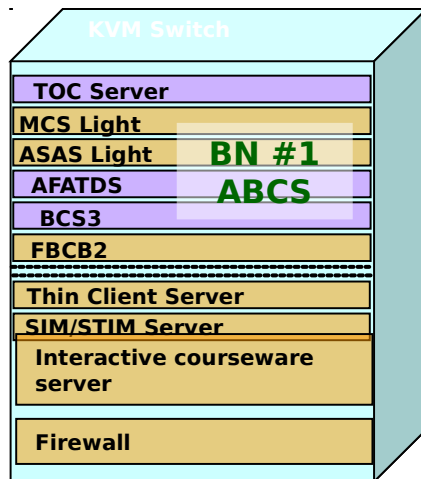
- 1 Student enclaves are Army-controlled remote environments.
- 2 Students initiate sessions to the learning environment via secure web connection, 3DES or higher.
- 3 Primary firewall only allows inbound secure web and secure Citrix client traffic.
- 4 Web portal to Citrix obtains secure Citrix connection authorization for students from Citrix environment.
- 5 Workstations establish secure Citrix connection to the Citrix environment based on obtained authorization.
- 6 Host-based firewall on Citrix server only allows inbound web portal secure Citrix connection authorization requests and Workstation secure Citrix connection requests.
- 7 Secondary firewall only allows SSH traffic between Citrix server and ABCS environment.
- 8 Certificate-authenticated SSH provides secure transport mechanism for VNC traffic to Citrix server.



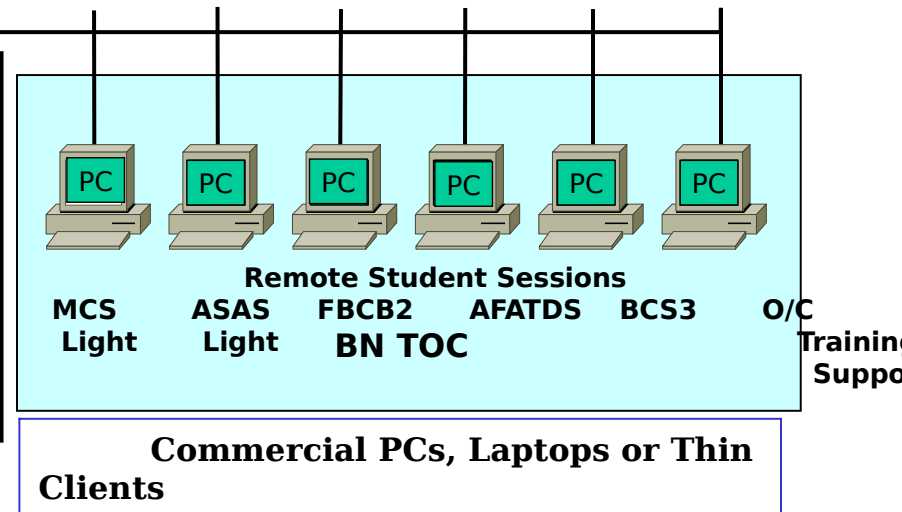
WHERE TOMORROW'S VICTORIES BEGIN

# Server Farm Architecture

Single rack!



Remote Classroom



# SD2TS



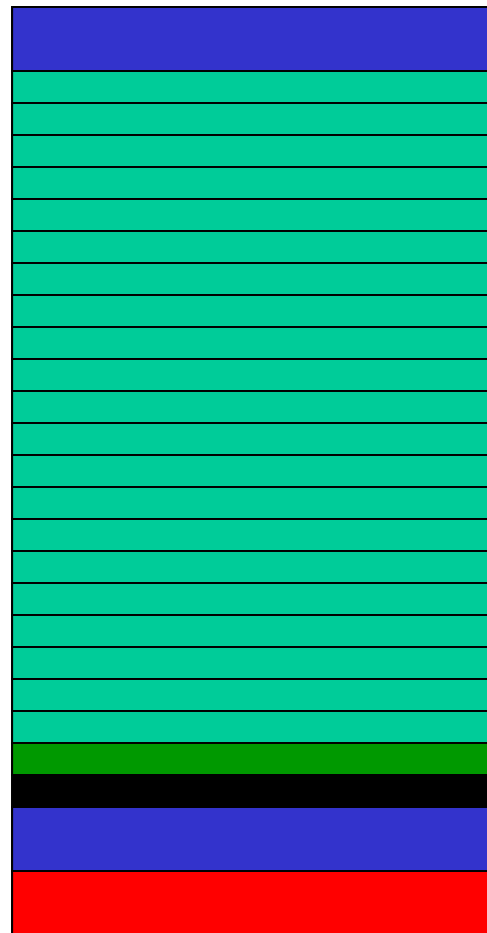
- **SD2TS currently in development with the administrative console pulled out for viewing.**
- **All ABCS training are available remotely to students and instructors on their PCs or laptops.**
- **Monitor is for system administration use only.**
- **It is about 4 feet high, enough for up to a total of 24 hosts for ABCS training systems, firewall, SIM/STIM and security platforms and has a small foot print!**

# **SD2TS Benefits**

- **Multi-Purpose**
  - **Institutional individual digital training**
  - **Remote site individual digital training**
- **Movable/Deployable**
- **Reduces overall ABCS HW/SW requirements**
  - **No upgrades required to DTFs/DTTPs**
  - **SW Configuration Management**



# MCS-L/FBCB2 Server Farm



MCS-L SQL Server

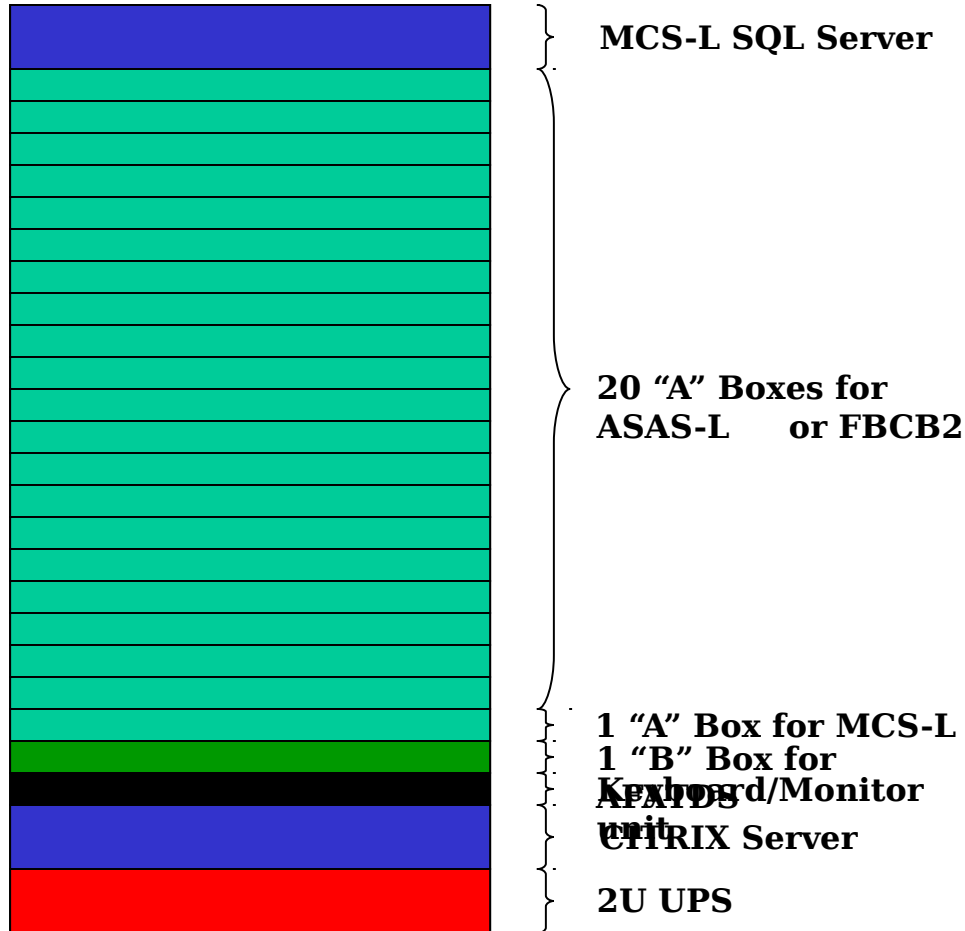
20 "A" Boxes for  
MCS-L or  
FBCB2

1 "A" Box for  
ASAS-L  
1 "A" Box for  
AFATDS  
Keyboard/Monitor  
unit  
CITRIX Server  
unit

2U UPS

20 Student Training Set  
21 "A" Boxes (PC)  
1 "B" Box (CCU)  
2 Servers (SQL/CITRIX)  
1 UPS  
Keyboard/Monitor unit  
KVM Switch  
20 MCS-L SW sets  
20 FBCB2 BFT SW sets  
20 WIN2K & Office 2K sets  
20 Solaris for Intel SW  
1 ASAS-L SW set (*basic applications*)  
1 AFATDS SW set  
2 Server 2K SW sets  
SQL Server SW  
CITRIX Server SW  
20-44 Concurrent CITRIX Client licenses  
20 MS Terminal Services Licenses  
Symantec "Ghost" SW

# ASAS-L/FBCB2 Server Farm



## 20 Student Training Set

21 "A" Boxes (PC)

1 "B" Box (CCU)

2 Servers (SQL/CITRIX)

1 UPS

Keyboard/Monitor unit

KVM Switch

20 ASAS-L SW sets

20 FBCB2 BFT SW sets

1 WIN2K & Office 2K set

20 Solaris for Intel SW

1 MCS-L SW set (*basic applications*)

1 AFATDS SW set

2 Server 2K SW sets

SQL Server SW

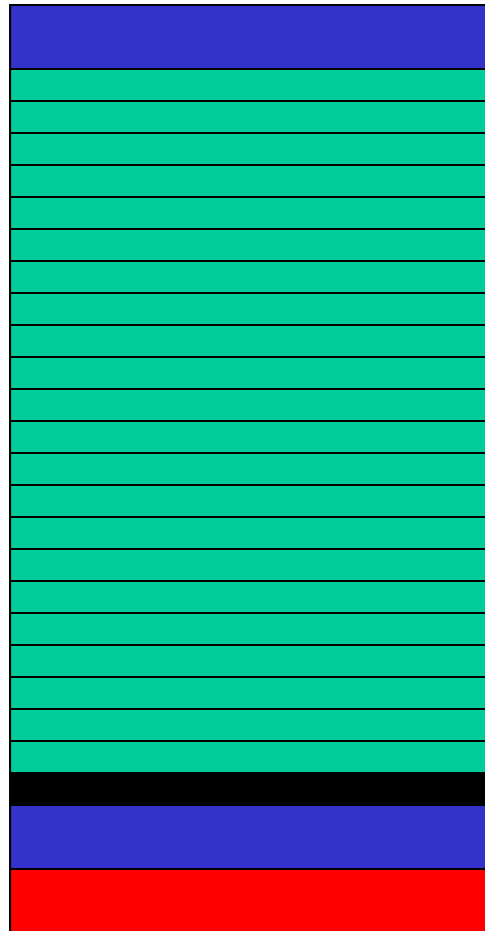
CITRIX Server SW

20-44 Concurrent CITRIX Client licenses

20 MS Terminal Services Licenses

Symantec "Ghost" SW

# BDE/BN Server Farm (Stack 1)



MCS-L SQL Server

5 "A" Boxes for BN  
ASAS-L

5 "A" Boxes for BN  
BCS3

10 "A" Boxes for BN  
MCS-L

2 "A" Boxes for BDE  
BCS3  
Keyboard/Monitor  
unit  
CITRIX Server

2U UPS

## BDE/BN Training Set

22 "A" Boxes (PC)

2 Servers (SQL/CITRIX)

1 UPS

Keyboard/Monitor unit

KVM Switch

5 ASAS-L SW sets (*basic applications*)

20 FBCB2 BFT SW sets

20 WIN2K & Office 2K set

20 Solaris for Intel SW

20 MCS-L SW set

7 BCS3 SW sets

2 Server 2K SW sets

SQL Server SW

CITRIX Server SW

22-44 Concurrent CITRIX Client licenses

22 MS Terminal Services Licenses

Symantec "Ghost" SW

# BDE/BN Server Farm (Stack 2)



4 "A" Boxes for BDE  
ASAS-L

5 "A" Boxes for BDE  
MCS-L

4 "B" Boxes for BN  
AFATDS

2 "B" Boxes for BDE  
AFATDS

1 "C" Box for BDE  
AMDPCS

Keyboard/Monitor unit

2U UPS

## BDE/BN Training Set (Cont'd)

9 "A" Boxes (PC)

6 "B" Box (CCU)

1 "C" Box (HCU2)

1 UPS

Keyboard/Monitor unit

KVM Switch

4 ASAS-L SW sets (*basic applications*)

9 FBCB2 BFT SW sets

9 WIN2K & Office 2K set

9 Solaris for Intel SW

9 MCS-L SW sets

6 AFATDS SW sets

1 AMDPCS SW set

16-32 Concurrent CITRIX Client  
licenses

16 MS Terminal Services Licenses

# **Server Farm Fielding (Phase I) (Apr-Jun 04)**

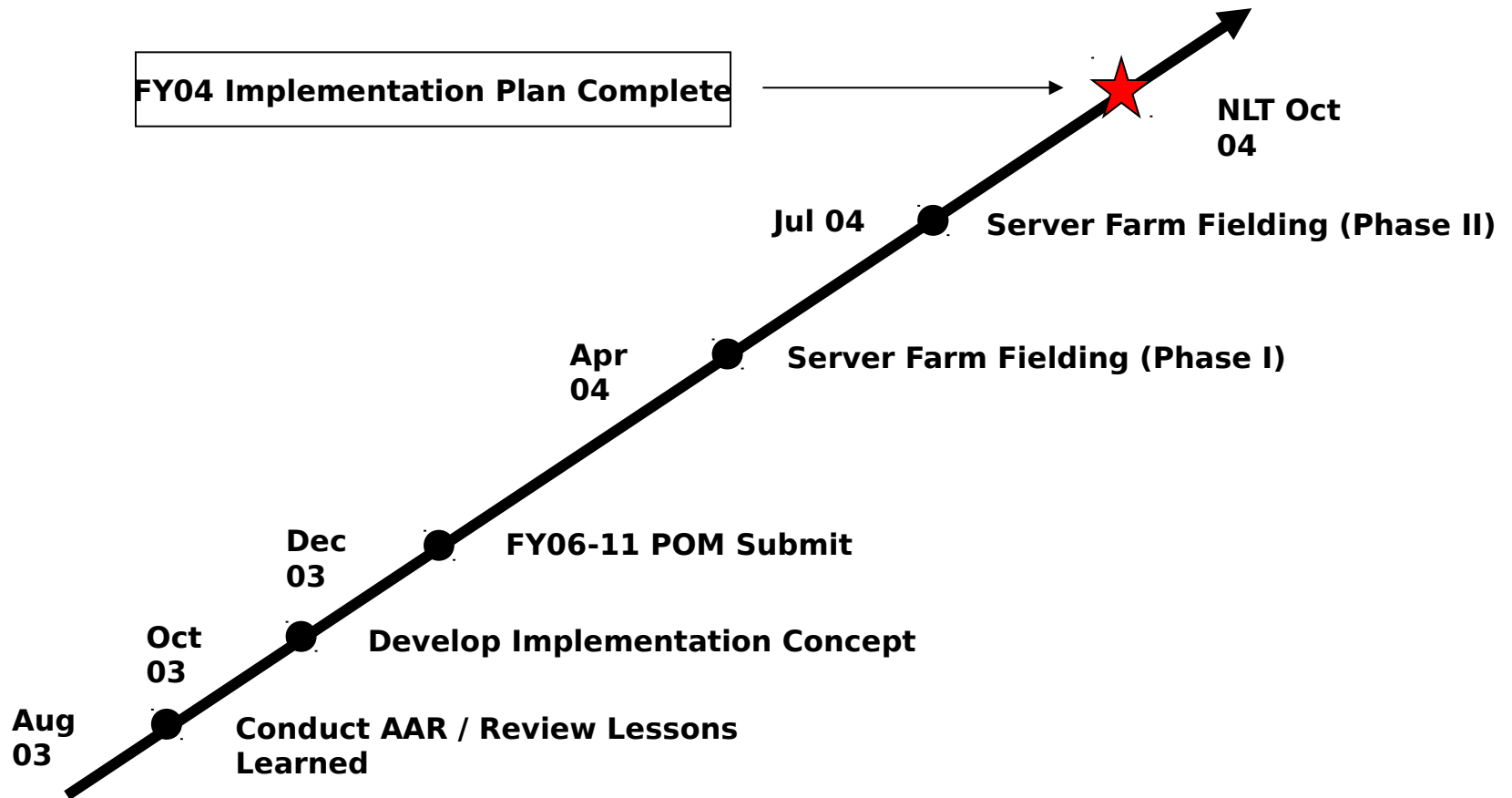
- **MCS-L/FBCB2 Set**
  - Benning
  - Knox
  - Gordon
  - Rucker (1 of 2)
  - Bragg
  - Sam Houston
- **ASAS-L/FBCB2 Set**
  - Huachuca
  - Bragg
- **BDE/BN Set**
  - Camp Dodge (DTDC)
  - Leavenworth (DLDC)
  - Bliss (USASMA)

# **Server Farm Fielding (Phase II)**

## **(Jul-Sep 04)**

- **MCS-L/FBCB2 Set**
  - Rucker (2 of 2)
  - Bliss
  - Sill
  - Huachuca
  - Leonard Wood (3)
  - Aberdeen Proving Ground
  - Redstone Arsenal
  - Lee
  - Jackson
  - Camp Dodge
- **ASAS-L/FBCB2 Set**
  - Camp Dodge
- **BDE/BN Set**
  - Bragg

# SD2TS Implementation Timeline



# Back-up Slides



# SD2TS Consolidated Costs

Microsoft Excel - FY04 Server Farm Funding Worksheet

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Reply with Changes... End Review...

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Installation	ASAS-L/FBCB2 Server Farm Set			MCS-L/FBCB2 Server Farm Set			BDE/BN Level Server Farm Set					
	# Sets	Cost	Total	# Sets	Cost	Total	# Sets	Cost	Total			
Ft. Gordon	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Benning	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Knox	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Leavenworth	0	\$107,250	\$0	0	\$117,550	\$0	1	\$194,700	\$194,700			
Ft. Rucker	0	\$107,250	\$0	2	\$117,550	\$235,100	0	\$194,700	\$0			
Ft. Bliss	0	\$107,250	\$0	1	\$117,550	\$117,550	1	\$194,700	\$194,700			
Ft. Sill	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Huachuca	1	\$107,250	\$107,250	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Leonard Wood	0	\$107,250	\$0	3	\$117,550	\$352,650	0	\$194,700	\$0			
Ft. Sam Houston	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Aberdeen Proving Ground	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Redstone Arsenal	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Lee	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Jackson	0	\$107,250	\$0	1	\$117,550	\$117,550	0	\$194,700	\$0			
Ft. Bragg	1	\$107,250	\$107,250	1	\$117,550	\$117,550	1	\$194,700	\$194,700			
Camp Dodge	1	\$107,250	\$107,250	1	\$117,550	\$117,550	1	\$194,700	\$194,700			
	3		\$321,750	18		\$2,115,900	4		\$778,800	\$3,216,450		
							25					



# SD2TS Set Costs

Microsoft Excel - FY04 Server Farm Funding Worksheet										
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	A	B	C	D	E	F	G	H	I	J
1	ASAS-L/FBCB2 Server Farm Set					MCS-L/FBCB2 Server Farm Set				
2	Item	Cost	Qty	Total		Item	Cost	Qty	Total	
3	Rack	\$3,500	1	\$3,500		Rack	\$3,500	1	\$3,500	
4	"A" Boxes (PC)	\$1,600	21	\$33,600		"A" Boxes (PC)	\$1,600	21	\$33,600	
5	"B" Box	\$10,000	1	\$10,000		"B" Box	\$1,600	1	\$1,600	
6	Monitor	\$1,000	2	\$2,000		Monitor	\$1,000	2	\$2,000	
7	Server (SQL/Citrix)	\$5,000	2	\$10,000		Server (SQL/Citrix)	\$5,000	2	\$10,000	
8	UPS	\$1,000	1	\$1,000		UPS	\$1,000	1	\$1,000	
9	Keyboard Monitor Unit	\$1,600	1	\$1,600		Keyboard Monitor Unit	\$1,600	1	\$1,600	
10	KVM Switch	\$250	1	\$250		KVM Switch	\$250	1	\$250	
11	ASAS-L SW Set	\$0	20	\$0		MCS-L SW Set	\$0	20	\$0	
12	FBCB2 BFT SW Set	\$0	20	\$0		FBCB2 BFT SW Set	\$0	20	\$0	
13	WIN 2K & Office 2K Sets	\$1,000	1	\$1,000		WIN 2K & Office 2K Sets	\$1,000	20	\$20,000	
14	Solaris for INTEL SW	\$500	20	\$10,000		Solaris for INTEL SW	\$500	20	\$10,000	
15	MCS-L SW Set (basic app)	\$0	1	\$0		ASAS-L SW Set (basic app)	\$0	1	\$0	
16	AFATDS SW Set	\$0	1	\$0		AFATDS SW Set	\$0	1	\$0	
17	Server 2K Set	\$1,000	2	\$2,000		Server 2K Set	\$1,000	2	\$2,000	
18	SQL Server SW	\$1,000	1	\$1,000		SQL Server SW	\$1,000	1	\$1,000	
19	CITRIX Server SW	\$1,000	1	\$1,000		CITRIX Server SW	\$1,000	1	\$1,000	
20	Concurrent CITRIX Client Licenses (20)*	\$15,000	1	\$15,000		Concurrent CITRIX Client Licenses (20)*	\$15,000	1	\$15,000	
21	MS Terminal Services Licenses (20)*	\$15,000	1	\$15,000		MS Terminal Services Licenses (20)*	\$15,000	1	\$15,000	
22	Symantec "Ghost" SW	\$300	1	\$300		Symantec "Ghost" SW	\$300		\$0	
23	<b>Rack Cost</b>			<b>\$107,250</b>		<b>Rack Cost</b>			<b>\$117,550</b>	
24										
25										
26	* Recurring license fees									
27										
28										
29										
30	Recurring Licenses - ASAS-L/FBCB2	\$30,000								
31	Recurring Licenses - MCS-L/FBCB2	\$30,000								
32	Recurring Licenses - BDE/BN	\$60,000								
33										
34										
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36										
Consolidated Cost \ Set Cost / Sheet3 /										
Ready										



# SD2TS Set Costs (Cont'd)

Microsoft Excel - FY04 Server Farm Funding Worksheet

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Type a question for help

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	L	M	N	O	P	Q	R	S	T	U
	BDE/BN Level Server Set					BDE/BN Level Server Set				
	Item	Cost	Qty	Total		Item	Cost	Qty	Total	
3	Rack #1	\$3,500	1	\$3,500		Rack #2	\$3,500	1	\$3,500	
4	"A" Boxes (PC)	\$1,600	22	\$35,200		"A" Boxes (PC)	\$1,600	9	\$14,400	
5	"B" Box	\$1,600	0	\$0		"B" Box	\$1,600	6	\$9,600	
6	Monitor			\$0		Monitor		0	\$0	
7	Server (SQL/Citrix)	\$5,000	2	\$10,000		"C" Box (HCU2)	\$5,000	1	\$5,000	
8	UPS	\$1,000	1	\$1,000		Server (SQL/Citrix)	\$5,000	0	\$0	
9	Keyboard Monitor Unit	\$1,600	1	\$1,600		UPS	\$1,000	1	\$1,000	
10	KVM Switch	\$250	1	\$250		Keyboard Monitor Unit	\$1,600	1	\$1,600	
11	ASAS-L SW Set	\$0	5	\$0		KVM Switch	\$250	1	\$250	
12	FBCB2 BFT SW Set	\$0	0	\$0		ASAS-L SW Set	\$0	4	\$0	
13	WIN 2K & Office 2K Sets	\$1,000	20	\$20,000		FBCB2 BFT SW Set	\$0	9	\$0	
14	Solaris for INTEL SW	\$500	20	\$10,000		WIN 2K & Office 2K Sets	\$1,000	9	\$9,000	
15	MCS-L SW Set (basic app)	\$0	20	\$0		Solaris for INTEL SW	\$500	9	\$4,500	
16	BCS3 SW Set	\$0	7	\$0		MCS-L SW Set (basic app)	\$0	9	\$0	
17	AFATDS SW Set	\$0	0	\$0		BCS3 SW Set	\$0	0	\$0	
18	Server 2K Set	\$1,000	2	\$2,000		AFATDS SW Set	\$0	6	\$0	
19	SQL Server SW	\$1,000	1	\$1,000		AMDPCS SW Set	\$0	1	\$0	
20	CITRIX Server SW	\$1,000	1	\$1,000		Server 2K Set	\$1,000	0	\$0	
21	Concurrent CITRIX Client Licenses (20)	\$15,000	1	\$15,000		SQL Server SW	\$1,000	0	\$0	
22	MS Terminal Services Licenses (20)	\$15,000	1	\$15,000		CITRIX Server SW	\$1,000	0	\$0	
23	Symantec "Ghost" SW	\$300	1	\$300		Concurrent CITRIX Client Licenses (20)	\$15,000	1	\$15,000	
24	<b>Rack #1 Cost</b>			<b>\$115,850</b>		MS Terminal Services Licenses (20)	\$15,000	1	\$15,000	
25						Symantec "Ghost" SW	\$300	0	\$0	
26						<b>Rack #2 Cost</b>			<b>\$78,850</b>	
27										
28						<b>Total 2 Rack System</b>			<b>\$194,700</b>	
29										
30										
31										
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Consolidated Cost Set Cost Sheet3

Ready

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